Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Section 68.4 of the Commission's Rules	)	RM-8658
Hearing Aid-Compatible Telephones	)	
	)	
	)	

Comments of The Ericsson Corporation
In Response to the Petition for Rule Making of
HEAR-IT Now

The Ericsson Corporation, on behalf of itself and affiliated companies (hereinafter collectively referred to as "Ericsson"), hereby submits its comments on the above-referenced Petition for Rule Making ("Petition") submitted to the Commission by HEAR-IT Now ("HIN"). In support thereof, Ericsson states the following:

I. Introduction

HIN's specific request is that the Commission amend its rules "...to specify that broadband PCS devices capable of voice transmission or reception must be hearing-aid compatible"[1] in accordance with "..current [Part 68] regulations regarding hearing aid compatibility."[2] In effect, HIN requests the Commission to

[1] HIN Petition, p. 1.
[2] HIN Petition, p. 8.

revoke the hearing aid compatibility exemption for PCS phones used in public mobile services.

As will be set forth below in greater detail, Ericsson has no objection to the substantive aspects of HIN's Petition. Indeed, Ericsson currently manufactures wireless phones which are hearing aid compatible in accordance with Part 68 of the rules and will manufacture phones for licensed and unlicensed PCS use which meet the requirements of Part 68. However, Ericsson strenuously objects to the non-substantive, factually inaccurate, scurrilous attacks on GSM technology which appear to be a commercially-motivated strategy designed to place a cloud over technology with which certain members of HIN will be competing in the PCS equipment marketplace.[3]

II. Hearing Aid Compatibility For PCS Devices

In order to meet the hearing aid compatibility requirements of Section 68.4 of the Commission's rules, a telephone must be capable of transmitting a magnetic signal in addition to an acoustic signal. Transmission of a magnetic signal enables a hearing aid wearer to avoid acoustic feedback which can make the hearing aid unusable.

Ericsson, as one of the world's leading manufacturers of wireless systems and terminals, including those based on TDMA and GSM technologies, is and has always been sensitive to the needs of the hearing-impaired community. As

[3] The spokesperson for HIN, Mr. James Valentine, is also the Chairman of the Wireless Communications Council and North American Wireless. North American Wireless is an organization which will be providing services to prospective PCS providers, including the provision of PCS infrastructure and terminal equipment. North American Wireless has selected CDMA equipment as its technology of choice for PCS deployment.

such, whether or not the FCC initiates a rule making proceeding as requested by HIN, Ericsson has made a corporate commitment to manufacture PCS and cellular terminals which are hearing aid compatible in accordance with the current Part 68 rules.[4] In fact, Ericsson currently markets a wireless PBX system in the 900 MHz Part 15 band which uses digital TDMA technology. The wireless telephone terminals used in connection with this system which are currently being delivered in the U.S. are already hearing aid compatible in accordance with current Part 68 regulations.

For the foregoing reasons, Ericsson has no objection to HIN's proposal insofar as it would require PCS phones to be hearing aid compatible in accordance with current Part 68 regulations.[5]

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[4] It should be noted that despite its commitment to make PCS devices hearing aid compatible in accordance with Part 68, Ericsson does not believe that compliance with current Part 68 rules is necessarily the best solution for the hearing-impaired. In discussions with experts on the subject Ericsson has been advised that compliance with Part 68 rules using any digital technology (TDMA, GSM, CDMA and/or others that may be developed in the future) may, in fact, create more problems for the hearing impaired than it solves. This is due to the fact that when a hearing aid wearer turns off the acoustic receiver so that he or she receives a magnetic signal, the acoustic feedback is eliminated. However, the hearing aid is then significantly more susceptible to a wide variety of magnetic interference coming from sources including, but not limited to, fluorescent lights, computer monitors, security stations at airports, etc. The interference encountered by some hearing aid wearers going through security checkpoints at airports can be temporarily disabilitating. The problem is exacerbated when a portable telephone is used since the additional mobility creates the opportunity for the hearing aid wearer to be subject to more numerous sources of magnetic interference.

[5] To the extent the FCC proposes to require PCS phones to be hearing aid compatible in accordance with Part 68, any such proposal should include reasonable time frames within which manufacturers are required to meet hearing aid compatibility requirements. Also, any proposal should not require manufacturers to be required to retrofit phones to meet prospective requirements.

III. Digital Device Interference To Hearing Aids

Telephone device compliance with Part 68 rules relating to hearing aid compatibility will not eliminate interference to hearing aids and other devices caused by a wide variety of RF sources.[6] Interference to hearing aids and other devices is an issue separate from compliance with Section 68.4. Notwithstanding the foregoing, in what appears to be the basis for its Petition to require PCS phones to be hearing aid compatible in accordance with Part 68, HIN singles out GSM technology and goes into a lengthy harangue about the interference it can cause to hearing aids. As support for the implication that GSM technology is the only technology which is capable of causing interference to hearing aids, HIN provides the Commission with a variety studies which ostensibly provide proof that GSM technology causes interference to hearing aids.[7]

The studies which HIN provides as support for its position are taken out of context and are not fully relevant to PCS systems in the U.S. For example, the studies submitted by HIN are based largely on pure GSM systems in the 900 MHz band as opposed to GSM-based systems proposed for use in the U.S. which will obviously be in the 1900 MHz band.

Also, GSM phones in Europe on which some of the studies are based, operated at 2 watts or higher power. These power levels are significantly higher

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[6] See, n. 4, p. 3.

[7] HIN Petition, p.4, n. 9.

than the power levels of portable devices proposed for GSM-based PCS systems in the U.S. GSM-based PCS terminals for the U.S. market will operate with power on the order of 125 milliwatts, or lower, average power. In fact, one of the studies HIN attaches to its Petition comes to the conclusion that lower powered, handheld GSM devices can be used without causing interference to certain hearing aids:

> It may also be mentioned that today there are 0.8 W hand portable GSM telephones giving a field strength which is 4 dB lower than the field strength of a 2 W hand-portable telephone. Reduction of the field strength by 4 dB causes a reduction of the interfering signal of 8 dB. Accordingly, hearing aids whose OIRIL just exceeds 55 dB when a 2 W GSM telephone is in operation may be used together with a 0.8 W GSM telephone. It cannot be expected, however, that there will be the same coverage with a 0.8 W hand-portable GSM telephone as with a 2 W telephone, since the GSM networks were designed for the use of 2 W hand-portable telephones.[8]

In contrast to the Danish Telecom Agency study, PCS networks based on GSM technology being planned for the U.S. will be designed to use low-power hand portable terminals. Thus, the potential for interference to hearing aids in the U.S. is expected to be significantly less.

The inference that GSM technology is the only technology capable of causing interference to hearing aids is similarly inaccurate. With respect to communications technologies, CDMA technology has the potential to interfere with hearing aids. Though CDMA technology in a "static" state is unlikely to cause interference, devices using CDMA technology are almost never going to

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[8] *Interference with hearing aids caused by GSM digital cellular telephones and DECT digital cordless telephones,* National Telecom Agency of Denmark, June 28, 1994, p. 24.

be in a static state. CDMA technology is based upon having very strict power controls at the base station which requires each portable device to be capable of transmitting at varying power levels. Moreover, the power levels of the portable devices will fluctuate rapidly as the device moves with respect to the base station, even if the distance from the portable to the base station changes ever so slightly. The constantly changing power levels of CDMA handsets are likely to cause interference to hearing aids and other medical devices.[9] Also, the DTX function and the adaptive bit rate scheme of the CDMA-based PCS technology will lead to power pulsing spectrum in the audible range. These power variations may also be detected by, and cause interference to, hearing aids and other medical devices.

In addition to communications technologies, there are numerous other sources of potential interference to hearing aid wearers in today's digital world. As mentioned above, sources of interference to hearing aids, especially hearing aids capable of using hearing aid compatible phones, include but are not limited to computer monitors, fluorescent lights, airport security systems, power generators and even AM radio broadcast stations. Thus, HIN's attempt to convince the Commission that GSM technology is the only technology capable of causing interference is simply an in accurate assessment of the problem.

Rather than being a problem caused only by GSM technology, interference to hearing aids and other devices is a problem due to the fact that

[9] *Communications Daily* reported on July 13, 1995, that a representative of Qualcomm stated that Qualcomm "...has results showing CDMA also causes some interference."

we live in a world in which the use of all types of wireless devices and other sources of magnetic radiation is increasing exponentially. The solution to the problem is not to ban wireless technology, especially not a technology which is not significantly different than other digital technologies in its ability to cause interference. The solution to the problem is to have the wireless services industry (including service providers and manufacturers) along with affected entities (including the hearing impaired community) and responsible experts (including recognized scientists and organizations) cooperatively work on voluntary solutions. Such solutions may include FCC rule changes requiring PCS devices to be hearing aid compatible[10] as well as changes in FDA rules to make hearing aids and other devices more immune to interference to the extent such changes, over time, can be made on a commercial and economic basis.[11]

One of the first steps in the process of managing interference, the type of which is described by HIN, is to have experts quantify the magnitude of the problem on a scientific basis in a controlled environment using devices of all technologies in a variety of frequency bands. The Cellular Telecommunications Industry Association ("CTIA") in cooperation with its members and manufacturers

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[10] As stated above, Ericsson is voluntarily in the process of making its cellular and PCS telephones hearing aid compatible in the context of Part 68.

[11] In testimony given to the House Information, Justice, Transportation and Agriculture Subcommittee of the Committee on Government Operations on October 5, 1994, Dr. Thomas P. Stanley, then Chief Scientist of the FCC, acknowledged that one solution to the general issue of interference to medical devices was for the manufacturers of such devices to provide better shielding to avoid RF interference in an increasingly wireless world. Mr. Charles Swanson of the Health Industry Manufacturers Association also testified at the same hearing that manufacturers of medical devices had an obligation to develop devices with better shielding to eliminate the problem of interference.

of digital communications technologies and representatives of hearing aid manufacturing companies, has already started this process.[12] It has contracted with the Center For The Study of Electromagnetic Compatibility of the University of Oklahoma to study the interaction between wireless phones and hearing aids. Preliminary testing, which will start shortly and go into the Fall of 1995, will include the collection, processing and compilation of existing data as well as measurements of the interaction between a wide variety of cellular, PCS, cordless and ESMR terminals and a variety of different types of hearing aids. Based on the results of these studies, the wireless services and hearing aid industries will have accurate data based on expected operating models for U.S. cellular, PCS and other CMRS systems. At that point in time it will be possible for all affected entities to evaluate the data, quantify the problem based on the magnitude of the problem and make reasoned decisions on the best solutions to eliminate or reduce any interference that can be expected.

IV. Conclusion

As set forth above, Ericsson has no objection to HIN's proposal which would in effect require PCS devices to be hearing aid compatible in accordance with existing Part 68 rules. Ericsson already manufactures TDMA devices which are hearing aid compatible and intends that its TDMA cellular and PCS devices

[12] Also, the Personal Communications Industry Association ("PCIA") has formed an Electromagnetic Compatibility Task Force to address the issue of interference between digital equipment technologies and medical devices such as hearing aids, pacemakers and hospital equipment.

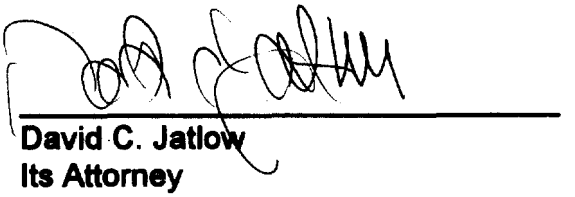
will be hearing aid compatible in accordance with Part 68 whether or not the FCC initiates an NPRM as requested by HIN.

However, Ericsson strongly objects to HIN's inference that interference to hearing aids is a GSM problem for a variety of reasons. First, as demonstrated by the comments filed with respect to HIN's petition, there is almost universal acknowledgment from the wireless services industry, including major trade associations and major manufacturing interests, that the problem of interference to hearing aids is an issue of interference management which should be resolved through cooperative efforts. Second, no digital technology, including the CDMA technology which the spokesman of HIN has selected to market to the PCS industry, has been proven to be exempt from causing interference to hearing aids or other medical devices. In this respect, responsible representatives of the wireless services industry are in the process of voluntarily attempting to quantify the magnitude of interference to medical devices, to scientifically obtain data which will enable the industry to develop solutions to the problem which are acceptable to all affected parties. Third, the very studies

submitted to the Commission as proof that GSM technology causes interference are flawed in the sense that they are based on facts which are not relevant to GSM-based PCS systems proposed to be deployed in the United States.

Respectfully submitted,

The Ericsson Corporation



David C. Jatlow
Its Attorney

Young & Jatlow
Suite 600
2300 N Street, N.W.
Washington, D.C. 20037
(202) 663-9080

July 17, 1995

CERTIFICATE OF SERVICE

I, Lisa M. Volpe, hereby certify that on this 17th day of July 1995, copies of the foregoing Comments of The Ericsson Corporation were sent by postage-paid first class mail to the following:

Baker & Hostetler
1050 Connecticut Avenue, N.W.
Suite 1100
Washington, DC 20036

Chairman Reed E. Hundt
Federal Communications Commission
1919 M Street, N.W.
Washington, DC 20554

Commissioner James H. Quello
Federal Communications Commission
1919 M Street, N.W.
Washington, DC 20554

Commissioner Andrew C. Barrett
Federal Communications Commission
1919 M Street, N.W.
Washington, DC 20554

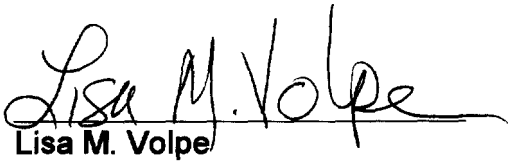
Commissioner Rachelle B. Chong
Federal Communications Commission
1919 M Street, N.W.
Washington, DC 20554

Commissioner Susan Ness
Federal Communications Commission
1919 M Street, N.W.
Washington, DC 20554

Regina Keeney, Chief
Wireless Telecommunications Bureau
Federal Communications Commission
2025 M Street, N.W., Room 5002
Washington, DC 20554

Rosalind K. Allen, Acting Chief
Commercial Radio Division
Wireless Telecommunications Bureau
Federal Communications Commission
2025 M Street, N.W., Room 5202
Washington, DC 20554

Richard M. Smith
Office of Engineering and Technology
Federal Communications Commission
2000 M Street, N.W., Room 480
Washington, DC 20554



Lisa M. Volpe